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School-based Professionals' Self-Reported Training, Preparation and Confidence in Providing Services to Students with ASD

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School-based Professionals' Self-Reported Training, Preparation and Confidence in
Providing Services to Students with ASD

Graduate Thesis/Project

Submitted to the Faculty

Of the School Psychology Program

College of Liberal Arts
ROCHESTER INSTITUTE OF TECHNOLOGY

By

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Abstract

The number of children diagnosed with an autism spectrum disorder (ASD) has grown exponentially in recent years (Simpson, 2008). Children diagnosed with ASD have lifelong impairments in three areas: socialization, communication and behavior (APA, 2000). These along with associated features of the disorder such as difficulties with learning, attention, affect, sensory processing, and regulating emotions and behavior can make creating an educational plan for these students particularly challenging. The current study addressed a number of research questions related to training, preparation and confidence to deliver services to students with ASD among school-based professionals. The study utilized survey-research, targeting school psychologists, speech-language pathologists, special education teachers and regular education teachers working in public schools across New York State. Results indicated that none of the participants received extensive training in ASD. Generally, all professions reported not feeling adequately trained and indicated the greatest need for additional training to be in the area of managing problem behavior. Hierarchical regression analyses were conducted to determine what factors, if any, would predict level of confidence in various school professionals' ability to provide services to students with ASD. Most commonly, favorable perceptions of training and more frequent access to consultation were related to higher levels of confidence. Two sets of one-way between-groups ANOVA's were also conducted to determine whether various disciplines and district settings differed significantly in their levels of confidence. Special education teachers reported higher levels of confidence in all areas of service delivery than general education teachers. Professionals did not differ in their levels of reported confidence based on district setting. Results of the current study suggest that school districts need to make a

greater effort to increase in-service trainings in ASD. In addition they need to consider providing access to consultation and teaming general education teachers with a special education teacher.

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Chapter I

Statement of the Problem

The number of children diagnosed with an autism spectrum disorder (ASD) has grown exponentially in recent years (Simpson, 2008). ASD is a general term that encompasses the disorders Autistic Disorder, Asperger's Disorder, and Pervasive Developmental Disorder- Not Otherwise Specified (PDD-NOS; Hoffman, 2009). Practically speaking, the effect ASD is having on families, schools, and communities is increasingly immense. Children diagnosed with ASD have lifelong impairments in three areas: socialization, communication and behavior (APA, 2000). Along with these core impairments, children with ASD often experience various other difficulties that significantly interfere with their academic, social and emotional lives (Wilczynski, Menousek, Hunter, & Mudgal, 2007). This may include, but is not limited to, difficulties with learning, attention, affect, sensory processing, and regulating emotions and behavior.

The impairments associated with ASD can have a substantial impact on family functioning and the community. Research indicates that parents of children with ASD report elevated stress, depression, and anxiety (Rao & Beidel, 2009). ASD also has a profound effect on the community as a whole. There has been a recent surge in increased media attention devoted to ASD (Simpson, 2008). Simpson (2008) notes that this is due to the increasing prevalence of ASD as well as the controversy surrounding the cause of ASD. In recent years, he adds that spurious information regarding evidence-based treatments for students with ASD has been printed in well-known publications leading to confusion in the community, and to school resources being allocated to ineffective programming for students with ASD.

The impact of ASD on a child extends well beyond school-aged years, and typically results in life-long impairment. Outcome studies for these students indicate that social interactions with peers do not spontaneously occur unless the environment, instruction, and programming are structured appropriately, and even then it is rare that these students are able to develop close friendships (Howlin, 2005). Rates of employment for adults with ASD average around 24%, while high functioning individuals are moderately higher at around 47% (Howlin, 2005).

Many children with ASD can also be expected to have co-occurring conditions that further complicate the educational process. Disorders such as intellectual disability (ID), attention-deficit/hyperactivity disorder (ADHD), self-injurious behavior (SIB), depression and anxiety are all commonly diagnosed along with ASD (Matson & Nevel-Schwalm, 2007). These conditions can greatly add to the number of challenges faced by children with ASD and those working with them at school. Co-occurring emotional and behavioral disorders (EBDs) can adversely affect students' response to treatment specific to ASD. Treatment likely requires more intensive school-based and community supports such as behavioral intervention programs (BIP) and mental health services.

Schools face specific mandates regarding the education of all students, including those with disabilities. The Individuals with Disabilities Education Improvement Act (U.S. Department of Education, 2004) mandates that all students regardless of their disability have the right to a free and appropriate education in the least restrictive environment. Both IDEA and No Child Left Behind (No Child Left Behind Act of 2001, 2008) require that all educators implement evidence based education programs. In addition, NCLB mandates that all students must be taught by highly qualified teachers (Scheuermann, Webber, Boutot & Goodwin, 2003). Thus educators

need to be adequately trained to comply with these mandates, especially those professionals working with students with ASD, and creating the educational programs for these students (Hess, Morrier, Heflin & Ivey, 2008).

New York State has recently added mandates of their own regarding the training of special educators and administrators in the area of ASD. In 2008 they increased the number of coursework/training hours in the area of autism from two to three clock hours from a provider approved by the NYS Education Department (New York State Education Department, 2008). Details regarding the content of coursework were also provided, and include etiology, prevalence, characteristics, and evidence-based instructional methodology for teaching students with ASD. This legislation was passed because students with ASD were not receiving evidence-based programming. It is important to monitor the level of knowledge and training of service providers for ASD to help ensure that these mandates are sufficient to improve current practices.

The presentation of ASD and level of impairment varies greatly from one student to the next. Those familiar with the disorder learn to expect and appreciate the unique symptomatology present in each student. Therefore, successfully educating these students involves highly individualized programming. Given their unique developmental and learning characteristics, they require the utilization of evidence-based methods specific to ASD (Simpson, 2008). Therefore, it is imperative that school-based multidisciplinary teams who are responsible for implementing these educational plans be highly skilled and well trained. The team may consist of special education teachers, speech-language pathologists, occupational therapists, physical therapists, general education teachers, administrators, school psychologists, and school counselors.

Despite the large body of research that exists on this population, many students are being educated by teachers who lack sufficient training on the core and associated features of ASD and evidence-based instructional practices (Simpson, 2008). Research shows that many students with ASD are not receiving evidence-based curriculum or interventions (Loiacono & Allen, 2008). Loiacono and Allen found that while school districts are putting forth some effort to provide staff development in this area, colleges and universities are falling short in adequately preparing special education teachers to work with students with autism.

Cascella and Colella (2004) surveyed speech-language pathologists to determine strengths and weaknesses in their knowledge of ASD to inform the field where to allocate educational resources. They concluded by stressing the need for all members of the multidisciplinary team to evaluate their knowledge and skill-level related to ASD. This would entail identifying the self-perceived strengths and weaknesses of service delivery for each team member, as well as the team as a whole. This study suggests it would be important for districts to evaluate their school teams in order to identify knowledge and skill sets of team members so that the professionals' strengths may be utilized to provide the best service possible. Results of these evaluations may also indicate types of training that are lacking in pre-service training programs. In general, current research is lacking regarding the training of educational professionals from other disciplines (physical therapists, occupational therapists, school psychologists, counselors, etc.) comprising the team, therefore more research is needed for other professional groups to have a complete sense of which professions are best trained in autism. If a particular group is perceived to have superior training, then perhaps other professional groups should consider this for their own training needs.

Due to the numerous challenges faced by this population, teachers and related service professionals need to be competent in a wide variety of areas. They need to be knowledgeable about the disorder, and the difficulties associated with it (Scheuermann, Webber, Boutot, & Goodwin, 2003). They should also be skilled at implementing specialized strategies for the learning, language and communication, social and behavioral support needs of these students. They also must be able to structure the classroom and the students' daily routine so that that they have the greatest chance of success. Team members should be well versed in behavioral interventions and positive behavioral supports that have been proven to be successful with this population.

Darling-Hammond, Chung, and Frelow (2002) found that teachers' perceptions of how well their training prepared them to teach is significantly related to their feelings of self-efficacy as a teacher, their confidence to accomplish certain teaching goals, as well as their sense of responsibility for student learning. Self-efficacy refers to a person's beliefs about their overall competence, whereas confidence is measuring the strength of a person's belief that they can do something more specific (i.e. accomplish a goal), self-efficacy being the more general construct. For example, among the items used to measure the construct of self-efficacy, this study examined teachers' confidence to accomplish certain goals, such as teach at a high level, or handle discipline problems.

Darling-Hammond, Chung and Frelow (2002) surveyed teachers from various training programs on their perceptions of how prepared they feel to teach. Although this research did not focus specifically on preparation to serve students with ASD, it did examine many factors that impact a teacher's sense of preparation to teach as a whole. Teachers who felt more prepared were significantly more likely to feel they could positively impact their students, handle

problems in the classroom, and teach students at a high level. Conversely, teachers who perceived themselves as underprepared were significantly more likely to be unsure of their teaching competencies, and also more likely to associate learning with external factors such as peers and home environments. This study suggests that it is necessary to determine the perceptions of preparedness among various educational professionals because it is the strongest predictor of self-efficacy in service delivery (Darling-Hammond, Chung, & Frelow, 2002). Teachers' sense of self-efficacy has been found to be related to behaviors impacting student learning such as eagerness to try new instructional methods, attitude towards students, willingness to determine the cause of learning problems, as well as the use of more effective, science-based techniques (Darling-Hammond, Chung, & Frelow, 2002).

The current study therefore, looked to evaluate how those school-based professionals who most often comprise the multidisciplinary team for students with ASD perceive their professional training in ASD, how prepared they feel to work with students with ASD, as well as how confident they feel in their service delivery. School-based professionals from twenty-five school districts across New York State were randomly selected. This included special education teachers, regular education teachers, school psychologists, and speech-language pathologists. These professionals were also surveyed to see what additional professional development they felt would be the most beneficial for them in their work with this population. These disciplines were selected because these are the professionals most often responsible for educating and remediating skill deficits of students with ASD.

Results of this study will inform the field of various disciplines' training and experience in working with students with ASD. It will also identify perceptions of preparedness to deliver services. This will indicate whether these professionals feel prepared enough to work with this

population and whether they believe they require further training. Identifying their sense of preparedness is also informative because as Darling-Hammond, Chung, and Frelow (2002) found, high levels of self-reported preparedness is related to an increased sense of confidence and self-efficacy, which in turn has been found to influence behaviors related to learning. Furthermore, this study will identify which areas of training professionals from different disciplines feel they could benefit from the most. As this is a population of students that requires services from a highly qualified and trained team of professionals, it is important to determine whether pre-service and in-service training programs are sufficient for each discipline comprising the team. This is also a population that requires treatment using evidence-based practices, and as stated by the National Autism Center, the use of these treatments is more complicated than merely knowing they are evidence-based (National Autism Center, 2009). This implies that knowledge of what to do is not sufficient to be successful with these students; it also takes some skill and training to implement these evidence-based programs in accordance with best practices.

Chapter II

Literature Review

Overview

Autism is currently regarded as the fastest growing developmental disability in the United States (Schwartz & Drager, 2008). It was recently reported that Autism Spectrum Disorders (ASDs) occur in 1 out of every 150 children (Centers for Disease Control, 2008). The deputy director of the Centers for Disease Control and Prevention has noted that this is a significant finding that will require national attention and response. This illustrates the importance of additional research on autism in order to fully understand the disorder and determine the needs of children diagnosed with ASD.

ASD has come to be considered a spectrum of difficulties rather than a distinct condition (Simpson, 2008). It is characterized by significant impairments in three areas: social interaction, communication skills and display of unusual behaviors and restricted interests (American Psychiatric Association, 2000). Simpson adds that the impact of ASD extends above and beyond the child, to their family, school, and surrounding community. The level of impairment for these students is even greater if they experience co-occurring disorders, such as learning and behavioral problems that are often associated with ASD.

As more children are diagnosed with ASD, more and more children are requiring services in public schools (Hess, Morrier, Heflin & Ivey, 2007). Due to the unique difficulties that characterize this population, educators have found that students with ASD require very specialized treatments and interventions (Simpson, 2008). The population of children with ASD is a heterogeneous one, with each student being quite different from the next. Educators and related service professionals are the crucial leaders responsible for coordinating students'

learning and individualizing programming. Therefore, a large-scale effort is needed to ensure an adequate pool of qualified personnel is working with these students so that they are receiving services of the highest quality with the highest level of fidelity. Simpson (2008) cites qualified and committed educational personnel as the number one critical element of effective programming for students with ASD. In recognition of this, states have begun to mandate teacher training specific to ASD to become certified. New York State recently increased the number of coursework/training hours in the area of autism from two to three hours for special educators and administrators (New York State Education Department, 2008).

In addition to these teacher-training mandates, federal legislation also contains educational statutes to ensure that students with disabilities receive a quality education that meets their needs. Certain specifications for creating individualized educational programs for students with disabilities are stated in the law (Hess, Morrier, Heflin & Ivey, 2008). For example, special education law currently mandates that all educators must implement evidence-based education programs (Individuals with Disabilities Education Improvement Act (IDEA; 2004). IDEA (2004) further states that all students regardless of their disability have the right to a free and appropriate education in the least restrictive environment. In addition, NCLB mandates that all students must be taught by highly qualified teachers (Scheuermann, Webber, Boutot & Goodwin, 2003). These education laws have been passed to improve the quality of education, provided by highly qualified staff, in an environment that meets students' academic, social and emotional needs. It is important to therefore assess educational professionals from various disciplines who work with this population regarding their training, level of preparedness and confidence to meet these mandates by delivering quality services to students with ASD. If it is determined that these

professionals are not adequately prepared, then it is important to identify their specific needs for additional training.

The current study looked to conduct this assessment, by examining the amount of coursework, training and experience in working with students with ASD among various members of school multidisciplinary teams (regular education teachers, special education teachers, school psychologists, and speech-language pathologists). It examined participants' perceptions of their training in terms of whether or not they feel prepared to work effectively with this population. These variables were further assessed as to how they relate to confidence level in service delivery to students with ASD. Group differences were examined among the various disciplines represented on the school teams. This study also looked to determine what areas of professional development related to ASD participants felt would be most beneficial to them.

Obtaining this information is of great importance to the field for several reasons. It is important to know if school-professionals feel adequately prepared because as Darling-Hammond, Chung & Frelow (2002) found, feeling well prepared is related to a greater sense of self-efficacy, which in turn is related to behaviors that influence student learning. Also, finding out if these professional groups feel well prepared is valuable because this is a population of students that required treatment using evidence-based treatments. And as stated by the National Autism Center, the use of these treatments is more complicated than merely knowing they are evidence-based (National Autism Center, 2009). Other potential benefits of this study, may be that it will allow educators and service providers to compare their perceptions to others and it may inspire them to seek out further professional development. It provides information about some disciplines feeling more confident to deliver services, which opens up further research

avenues. Training programs should look to see why some professional groups feel more confident than others in certain areas, and they should then consider how to modify training in their field so that they can also feel more confident. Also, the areas of service delivery indicated as a priority for additional training, will hopefully inspire school districts to look into finding additional training for their staff in these topic areas.

Core Diagnostic Features of Autism Spectrum Disorders

Autism spectrum disorders (ASD) are located in the DSM-IV-TR under a broader classification of disorders known as Pervasive Developmental Disorders (American Psychological Association, 2000). The three disorders included under the ASD label include: Autistic Disorder, Asperger's Disorder, and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS). As previously mentioned, these disorders are typically associated with impairments in social interaction, communication, and restricted interests and stereotypic patterns of behavior (APA, 2000). The hallmark feature of ASD is a qualitative impairment in social functioning (APA, 2000). Children and adolescents with ASD display difficulties in various aspects of socialization. Some of these social processes include gaze, joint attention, play, attachment, peer relations and affective development.

From very early on in development, research shows that the human face sparks very little interest for children with ASD (Carter, Davis, Klin & Volkmar, 2005). Parents frequently report noticing the avoidance of eye contact from their children with ASD. In an educational setting, this can lead to the stigmatization of this population. Children without ASD are unable to understand why their peers with ASD look at the ground or look all around when they are talking to them during social activities. Furthermore, children with ASD also fail to develop joint

attention, which involves sharing with another individual the experience of a third object or event.

The development of some of the social behaviors previously mentioned, such as joint attention and imitation, are strong predictors of language acquisition for children with ASD (Tager-Flusberg, Paul & Lord, 2005). Children with ASD do not show a preference for speech sounds over alternative sounds as typically developing children do. This results in a delay of the onset of speech, as well as a failure to integrate basic communication patterns. Frequently children with ASD will develop an odd vocal quality, intonation and pattern of speech (Tager-Flusberg, Paul & Lord, 2005). Intonation peculiarities, for example talking in a monotone manner, often impact the quality of these students' social interactions. Peers may focus their attention on the unusual vocal quality, rather than attending to what the student with ASD is saying.

Toddlers with autism display delays in imitation skills like oral-facial imitation and imitation of object use. Deficits in the ability to imitate those around them can lead to substantial developmental consequences for students with ASD (Carter, Davis, Klin & Volkmar, 2005). Play is another area of social functioning that is unconventional for students with ASD. Their play is characterized by a lack of social interaction as well as repetitive and mundane manipulation of objects. Children with ASD also have difficulty recognizing the emotional states of those around them (Carter, Davis, Klin & Volkmar, 2005). Research is uncertain about whether or not this is the result of a perceptual difficulty or a cognitive inability to understand others' emotional states.

As a whole, these social deficits have a significant impact on the peer relationships formed by students with ASD (Carter, Davis, Klin & Volkmar, 2005). In younger children, activities are often solitary, self-stimulatory and repetitive in nature. They exhibit a reduced

interest in social interaction. In older children, typical peer relationships are rarely developed. These students are less likely to approach others, and are more likely to approach adults than their peers.

The second core feature of ASD is impairment in communication (APA, 2000), which includes receptive, expressive, and pragmatic language. Educators may have difficulty interacting with students with ASD due to their struggles with communication (Humphrey, 2008). One aspect of language that appears to be affected by ASD is word use. Children with ASD, particularly high functioning ones, develop an abundant knowledge of words and score very well on standardized verbal tests. Despite their advanced vocabularies, these students have significant difficulty in using their language for the purpose of social communication. They also have difficulty using language involving "mental states" which include words like 'pretend', 'remember' and 'think.' Students with ASD also appear to have difficulty with metaphorical language.

Difficulties in the social use of language, also known as pragmatics, are common among students with ASD. They seldom use language for the purpose of initiating social exchanges, acknowledging their audience, or seeking information from their peers (Tager-Flusberg, Paul & Lord, 2005). Even older children with ASD are rarely observed using language to chronicle events in a conversational manner. Paul and Feldman (1984) identified that children with high verbal ability and ASD had difficulty identifying the topic of conversation initiated by another individual. Additionally, they found they had trouble picking up on social cues throughout the conversation and presupposing what information they could reasonably expect their listener to have about the topic being discussed.

One of the most overtly noticeable aspects of deviant speech in some students with ASD is echolalia (Tager-Flusberg, Paul, & Lord, 2005). This is the repetition of words that someone has spoken using a similar inflection. It may be immediate or it can be delayed. Research shows that echolalia seems to serve a communicative function for these children (Tager-Flusberg, Paul, & Lord, 2005).

Restricted interests and stereotyped behaviors are the third area of dysfunction for children with ASD (APA, 2000). These restricted interests are often of an unusually intense magnitude and may be developmentally typical or atypical for their age group. Topics may range from cars to past Presidents, or in older children from weather to geography (Hoffman, 2009). Even if the focus reflects a typical area of interest for same-aged peers, the intensity is far greater for the student with ASD than it is for the typically developing child. In school, this intense focus on task-irrelevant topics is likely to interfere with learning, as it may predominate the student with ASD's thinking regardless of what the class is working on.

In addition to having restricted interests, children with ASD may also engage in stereotypic and repetitive motor mannerisms such as opening and closing doors, or moving parts of objects. Other stereotyped behaviors may include hand flapping, rocking and spinning. Students with ASD may become intensely rigid about following fixed routines; therefore any slight modifications in their school day can result in extreme behavioral outbursts. According to Kanner (as cited in Hoffman, 2009) these students can be described as having an "insistence on sameness" (p. 39).

The variability of these core features among individuals with ASD and within the same individual over time highlights the need for educational professionals to be well versed in the challenges associated with this disorder. They must also be prepared with evidence-based

assessment and intervention strategies for meeting these challenges in order to provide the highest quality education possible.

Autistic Disorder, Asperger's Disorder & PDD-NOS vary in the presentation of the core impairments. The prototype ASD that includes impairments in all three areas (social, communication & stereotyped behavior/restricted interests) is Autistic Disorder. To meet this diagnosis, delays must be present before age 3, and 20-25% of this group may experience a developmental regression in early childhood (Hoffman, 2009). Hoffman (2009) notes that while effects are likely to be life-long, a more positive prognosis is associated with higher language and cognitive abilities.

The diagnostic criteria for Asperger's Disorder are impairments in social skills and repetitive behavior/restricted interests, only two of the core areas (APA, 2000). Students meeting this diagnosis do not have a receptive or expressive speech/language delay and are likely to have a precocious vocabulary (Hoffman, 2009). However, they do often show difficulties with pragmatic language. These students also do not have clinically significant adaptive behavior or cognitive delays. Asperger's Disorder is often not recognized until children enter school when difficulties with peers become more apparent. Social abilities may improve in adolescence for these students, and it is coupled with a better prognosis than Autistic Disorder (Hoffman, 2009).

PDD-NOS is a diagnosis given to children who do not meet criteria for either Autistic Disorder or Asperger's Disorder (APA, 2000). Social deficits are the primary area of impairment for these students, along with either communication or behavioral difficulties (Hoffman, 2009). Deficits often begin for these children within the first few years of their lives. This disorder is also linked with a better prognosis than Autistic Disorder. Due to the lack of evidence that these subgroups are actually different disorders and the fact that students with each of these diagnoses

often benefit from the same interventions, it is anticipated that DSM-V will no longer contain these three different disorders and will likely use the core diagnosis label of Autism Spectrum Disorder (ASD). Thus, this term will be used throughout the current study.

Etiology

ASD is a genetically based disorder that affects the brain's neural structure resulting in too many or too few cells in different parts of the brain. This impacts students' information processing ability that then engenders the behavioral manifestations commonly associated with ASD. These neuropsychological deficits affect the learning process and behavior for these students (Grofer, Klinger, Dawson & Renner, 2003).

Co-occurring Disorders

In addition to the three core areas of impairment, individuals with ASD also often experience additional difficulties that interfere with their life opportunities (Wilczynski, Menousek, Hunter, & Mudgal, 2007). The disorder most frequently associated with ASD is Intellectual Disability (ID) (Matson & Nevel-Schwalm, 2007). Seventy-five percent of people diagnosed with ASD also have some degree of ID. Other disorders commonly co-occurring with ASD include ADHD, anxiety, self-injurious behavior, aggression and depression (Loveland & Tunali-Kotoski, 2005).

These disorders can influence the child and their family as much if not more than ASD itself because they can augment difficulties with learning, behavior and social interactions. Given that ASD can present itself so differently from person to person, it can be a challenge to determine if certain behaviors indicate a co-existing psychiatric disorder, or if it is part of the ASD. For example, a student may become extremely anxious during times of transition at school, which could be a feature of ASD, or could represent a co-existing anxiety disorder

requiring further treatment. If an additional diagnosis is given, students with ASD will require additional interventions specific to the co-occurring disorders. Co-occurring disorders and impairments also affect these students in their school environment. Frequently they may exhibit the inattention, hyperactivity and impulsivity characteristics consistent with ADHD. Anxiety coupled with ASD may result in tantrums, aggression, frustration, irritation, disobedience, and other adverse behaviors. Depression is commonly seen in higher functioning individuals with ASD and often stems from their awareness that both the quality and quantity of their social interactions with peers is not what it should be. Generally, the level of ID is a factor in predicting the presentation and severity of aggressive and self-injurious behavior (Matson & Nevel-Schwalm, 2007). Each of these disorders presents quite differently for each student with ASD. In addition, features of the disorder may also vary in the same individual over time as they mature, such as when they transition from childhood to adolescence. This adds to the heterogeneity of the population of ASD students, and makes it increasingly difficult for educators to know what to expect based solely on their diagnosis.

Learning Characteristics

Research has shown an association between children with ASD and certain distinct learning characteristics requiring specific instructional skills (Arick, Krug, Fullerton, Loos, & Falco, 2005). Educators must therefore be aware of these learning characteristics so that students can learn to the best of their ability. Rogers and Vismara (2008) point out a crucial factor in teaching learning skills to students with ASD. They comment that adults cannot directly teach these students all of the skills they need to be successful. Instead, these students must be able to extract knowledge on their own throughout the day by imitating and engaging with their peers as well as exploring their environments. Therefore, language, imitation, peer engagement,

imaginative use of objects, joint attention, and tuning in to the emotional state of others are pivotal skills these students need to be able to learn in this way. As these are typically impaired abilities for students with ASD, this can be an arduous task faced by school-based professionals, especially if they are not well trained.

Multiple neuropsychological processes may be adversely affected in students with ASD, which may in turn impact their ability to learn in a typical school environment. Some of these processes include executive functions, which are cognitive abilities involved in problem solving and the self-regulation of behavior, motivation, and affect (Grofer, Klinger, Dawson & Renner, 2003). Shifting or transitioning from one activity to the next is an executive function skill that may be difficult for students with ASD (Arick, Krug, Fullerton, Loos, & Falco, 2005). Studies have also shown that tasks requiring flexibility and planning are challenging for children with ASD, whereas they perform well on inhibition tasks (Grofer, Klinger, Dawson, & Renner, 2003).

Attention processes may also be adversely affected for students with ASD (Grofer, Klinger, Dawson & Renner, 2003). Clinical observations of these students detail their tendency to be non-responsive to typical attempts to gain their attention, such as calling them names. Research has shown that students with higher cognitive abilities have strengths in focusing and sustaining their attention, however they are impaired in their ability to orient their attention to certain stimuli. Grofer, Klinger, Dawson & Renner (2003) note that orienting attention entails disengaging from a current stimulus and shifting to a new set of stimuli, and as previously mentioned shifting can be very difficult for this population. Selective over-focus on details results in difficulty understanding the main point or "gist" of what they are learning.

Processing complex information can be quite challenging for this population (Arick et al., 2005). They deal relatively well with rote information, and are able to remember specific

details, however they have a difficult time with episodic memory, or remembering events they have experienced. This deficit greatly impacts their ability to generalize new knowledge they have acquired regarding appropriate behavior to actual social/academic situations. Research has also suggested that memory problems may be due to a difficulty organizing information effectively during encoding or retrieval memory processes (Grofer, Klinger, Dawson & Renner, 2003). Students with cognitive impairments may also have more difficulties with basic recognition memory.

Joint attention deficits can also negatively affect students' ability to learn in a typical classroom. In addition, this deficit has a marked impact on the acquisition of language. These children have difficulty coordinating their attention between people and objects. They also often have difficulty generalizing newly attained skills. Once a new skill is learned, the student may not utilize it functionally unless it is programmed for generalization and practiced in a variety of situations.

In addition to these cognitive deficits, pupils with ASD also have other commonly occurring learning characteristics. One of these characteristics is failing to make critical distinctions when presented with new material. For example, difficulty with auditory discrimination could contribute to trouble pairing objects with the correct word. Research has also found that students with ASD may have impairments in their implicit learning skills. This is defined as an instinctive information-processing skill that is separate from any conscious efforts to learn information (Grofer, Klinger, Dawson & Renner, 2003). Not having these skills may result in an inability to automatically synthesize information across multiple experiences. Implicit learning is typically something that we assimilate into our daily lives without consciously realizing it, for example picking up on social cues from another person and

integrating that into your every day social interactions. A student with ASD likely will not recognize that when they were talking very closely to another person they appeared uncomfortable, and then next time automatically step back before talking to someone else. Information gleaned implicitly generally involves abstract concepts, rather than rote instructions of how something should be done. Students with ASD may need to be explicitly taught information that teachers expect most students will learn independently in this way.

The usual pattern of strengths and weaknesses in learning style for students with ASD presents challenges to teachers with regard to specific academic subjects and adapting the curriculum appropriately (Humphrey, 2008). For example, science offers phenomena and direct experimentation that may engage these pupils visually. However, science also entails the use of 'abstract' concepts the student is unable to see or feel. As mentioned, these students tend to interpret things very literally so abstract tasks may be quite difficult for them to grasp. The teacher may need to use concrete examples in order for the pupil to comprehend the material. In general, students with ASD tend to have an uneven cognitive profile that may be difficult for professionals who are not well trained on this population to fully grasp. Higher functioning students with ASD may be at the top of their class, and able to recall rote information such as the elements from the periodic table verbatim; however, these same students may struggle greatly when asked to utilize abstract thinking to write a paper written from the perspective of a famous politician.

School-Related Issues

As previously discussed, ASD manifests itself varying from individual to individual and this creates unique challenges for special educators (Schuermann, Webber, Boutat & Goodwin, 2003). Therefore, students with ASD require coordinated services from related service

professionals (i.e. Speech-Language Pathologist, School Psychologist, Occupational Therapist, Physical Therapist) above and beyond what the classroom teacher can provide. It is important that all of these school-based professionals have a detailed understanding of the core and associated features of autism and how they relate to school functioning. The school environment can be frustrating and confusing for students with ASD because of their cognitive deficits and difficulties with communication and socialization. They may not understand why their teacher forgot to open the blinds like she does every other morning, or be confused when a peer who talked to them yesterday refuses to talk to them today about the various species of lizards that exist. This frustration may build, leading to a lack of motivation to participate in their surrounding environment. In addition, skills necessary for learning and basic functioning may not have been acquired or may be delayed making learning that much more challenging a task. As a result, these students require specialized teaching methods as well as assistance and knowledge from a variety of professionals so that they can be better understood and can develop into successful learners in the school environment.

In general, schools have certain expectations for their students that are associated with enhancing skill development and knowledge necessary to be successful in life. Helping them to acquire new skills may be easier said than done for students with ASD because of the core and associated features of the disorder. For example, schools require students of all ages and abilities to engage in social group activities with their peers for an appropriate length of time. Students with ASD who have difficulty with joint attention might have difficulty doing so (Carter, Davis, Klin & Volkmar, 2005). If a group of students are huddled around the classroom pet, the child with ASD may be standing near the pet, however they are not likely to be coordinating eye gaze with the other students, or to be involved in the group's gesturing or conversation regarding the

pet. As a result, the child with ASD will miss out on the social interaction taking place, and fails to take note of the social skills involved in this interaction.

Students are also expected to follow directions provided by a teacher. This often involves modeling of a certain action that the students are expected to imitate. The difficulty with imitation experienced by students with ASD can significantly impact their ability to follow along in this manner (Carter, Davis, Klin & Volkmar, 2005). These students would likely require more explicit instructions and support in order to complete the task. Imagine the teacher who is demonstrating how to use a certain toy during recess: the student with ASD would have a very difficult time learning from this demonstration to enable them to utilize the toy in the manner in which it was designed. Other expectations of students in the classroom may be acquired through imitation as well. This includes certain group attending skills, such as sitting and participating appropriately. For the typical student who does not know how to gain adult or peer attention in an appropriate manner, the teacher may reinforce others in the class who are able to do so in hopes that the student will be able to emulate their peer's actions. It is likely that this student will be able to successfully replicate and develop this skill, however students with ASD would again require much more explicit directions regarding the expected behavior, because they may not be able to spontaneously imitate others.

Younger students are required to play with others according to group rules, participating appropriately. The type of play students with ASD often engage in does not always correspond well with the type of play carried out by other students. For example, typically developing peers might play together by racing two toy trucks on the ground, however a student with ASD would be more likely to play with the toy in a nonfunctional manner. They might perseverate on the toy truck's wheels and begin spinning them over and over again, rather than becoming involved in

their peers' activity. Children with ASD also lack the presence of a different type of play known as symbolic play. An example of symbolic play would be moving a book through the air as an airplane. Later on in typical development, this imaginative play turns into a type of group play known as socio-dramatic play. This type of play is considered a critical skill for students in the classroom to develop. This involves acting in character roles when playing "house" or "school." Students with ASD lack the abstract thinking required to conceptualize a pretend environment and the social skills to take part in this type of play.

In secondary schools, students are expected to form and work in groups for various assignments. Certain requirements of group participation include commenting in turn, asking questions of the group, settling disputes among group members, taking on a leadership role, but also being able to follow along with the group when necessary. Students with ASDs' social and communication deficits often make them the last to be chosen for groups. In addition, their difficulty seeing others' perspectives may lead to clashes with group members. If a teacher is aware of the effects of ASD on social interactions they will be more likely to assist the student in meeting expectations. Also, if a teacher is able to educate peers about ASD it may promote a sense of understanding among their classmates (Humphrey, 2008).

Students with ASDs' difficulty identifying the emotions of others has implications for the student's interactions with their peers as well as their teachers. The student with ASD may not be able to recognize the annoyance on a peer's face or the anger on their teacher's face when they are behaving inappropriately. Without the recognition of these emotions, these students will continue to engage in the behavior that is bothersome to others. Furthermore, the teacher or peer may assume the child is deliberately continuing to engage in the behavior to make them angry. This will negatively impact the relationship quality between the student with ASD and the other

individual; either further alienating him from his peers, or influencing his teacher's view of him. These students may need to be directly taught types of emotion in a variety of scenarios with varying individuals in order to identify them on their own.

The communication deficits associated with ASD also have a significant impact on ability to function successfully in the classroom. These pupils tend to interpret and utilize language quite literally (Welton, 2004). The use of metaphors or figures of speech can be both enigmatic and a source of frustration (Humphrey, 2008). For example, a teacher might tell a student having a bad day to 'turn over a new leaf.' A typical student would understand that they should attempt to start over, however a student with ASD would be very confused by this statement. Humphrey and Lewis (2008) observed a busy teacher, saying to a pupil with ASD 'hold that thought,' which, if interpreted literally could create quite a lot of confusion. Therefore, an educator of pupils with ASD needs to be precise with the language they use, and to be sure their motive is easily comprehensible. Trouble understanding metaphoric language may also cause them difficulty when the teacher asks them to think and respond in an abstract way such as when the teacher asks the students to utilize problem-solving skills. Their literal sense of thinking may inhibit their ability to think of possible solutions outside of what they have previously experienced.

Teachers must focus on building functional communication for students with ASD (Salisbury, Brown, Gruenwald & Powers, 1980). This includes the ability to greet and gain attention from peers and teachers appropriately. In addition, students should be able to use communication to state their intentions, direct others, ask for information or help, ask and provide feedback to peers, and answer questions. They also need to be able to restate rules, provide rationale for their own behavior, and identify the cause of an event. Teachers will need

to determine how each particular student can best communicate with others, whether it be actually verbalizing their thoughts, or using some alternative mode of communication.

Students with ASDs' restricted interests may negatively impact their peer interactions. Students are expected to interact verbally with their peers, which includes initiating conversation as well as commenting on a topic of conversation identified by a peer. However, if the student with ASD's obsession stems around a popular movie containing monsters, he/she may watch the movie over and over again and do research online on the different types of monsters in the movie. He/she would talk at length about these types of monsters with their peers, failing to pick up on social cues from their peers attempting to change the topic of conversation. These areas of interest usually are nonfunctional for these students because they don't provide them with the practical information they need to be successful socially, academically or vocationally.

Students with ASD have a need for routine and structure that competes directly with the hectic, noisy, chaos that normally ensues in the average school day (Humphrey & Lewis, 2008). Classroom schedules change from day to day, and students are asked to transition frequently from one activity to the next. As such, school can produce quite a bit of anxiety for students with ASD. In the study by Humphrey and Lewis regarding life in school, one pupil was quoted as saying "I'm upset every second, every second I've got tears in my eyes" (p. 38). Struggling to deal with the surrounding environment makes learning the curriculum that much more difficult for these students. Simpson (2008) explains that teachers and other school-based professionals need to utilize structure and consistency to create a physical and psychological organization of the day by allowing the student with ASD to plan on task requirements, anticipate expectations, and work on coping skills.

Students need to be successful socially and academically, but they also need to be self-sufficient within the classroom. This includes having the ability to work independently by initiating and staying on task without additional teacher direction, which could be particularly difficult for students with ASD. The directions provided by the teacher may be confusing for a student with ASD if the language utilized is abstract or complex, due to their communication deficits. Students are also expected to have certain self-care skills like toileting, washing hands, and dressing independently. However, some students with significant cognitive impairments may struggle with these tasks and require further assistance from a school-based professional.

In addition to struggling to meet expectations in the classroom, students with special needs often have difficulty outside of the classroom as well. These students are more likely to be bullied by their peers than typical students (Norwich & Kelly, 2004). For students with ASD, their social and communication difficulties as well as their 'odd behavior,' arguably make them even greater targets for bullies (Humphrey, 2008). Additionally, because of their difficulty with perspective taking, these students are less likely to report being bullied to their teachers, because they are unaware that adults cannot tell what is going on in their heads (Moore, 2007).

Overall, these students have a variety of needs in the classroom that teachers need to be prepared to meet. To comply with federal mandates, the strategies utilized by teachers and other school professionals need to be evidence-based specifically for use with the ASD population.

Evidence-based Practices

Evidence-based practices (EBP's) are defined by the American Psychological Association (APA) as the integration of the best available research combined with clinical expertise in the context of the client's characteristics, culture, and preferences (American Psychological Association, 2005). EBP's need to be utilized in individualized treatment plans for

students with ASD in order for them to receive the various supports needed to improve skill deficits (Simpson, 2008). Teachers and the other school-based professionals comprising the multidisciplinary team play a major role in the development and use of students' individualized education plans.

The multidisciplinary team appointed to create Individualized Education Programs (IEP) for students with ASD should include certain components in order to ensure its effectiveness. As previously mentioned, each student with ASD presents with a unique set of strengths and challenges, and as such each plan needs to be individualized (Simpson, 2008). School programming for students with ASD should correspond directly with assessment results of the child's needs in order to ensure that the highest level of learning takes place (Arick, Krug, Fullerton, Loos & Falco, 2005). Furthermore, educational plans must focus on the three core deficits associated with ASD (Iovannone, Dunlap, Huber & Kincaid, 2003). This should include communication skills, such as expressive/receptive language and spontaneous language. Building functional communication skills should be a major objective of the students' educational plans (Rogers & Vismara, 2008). Depending on the student's cognitive ability the type of communication utilized may vary greatly. A higher functioning student with ASD may be able to communicate effectively with spoken language; however, a student with significant cognitive impairment may rely on signing and gesturing as their primary mode of communication. Also, social skill supports, which may entail developing types of play, joint attention and perspective taking skills, will improve interactions with their peers (Wilczynski, Menousek, Hunter, & Mudgal, 2007). Opportunities for social exchanges with typical peers should be provided as well to foster social growth (Rogers & Vismara, 2008). This will provide a model for students with ASD to learn typical social practices such as entry into a conversation,

and maintaining an appropriate distance and vocal intensity. Behavioral objectives in IEP's may also include reducing stereotypic behaviors, adjusting to transitions, and managing sensory stimulation difficulties (Wilczynski, Menousek, Hunter, & Mudgal, 2007). Teachers may need to provide the student with a "safe" place to briefly perform the stereotypic actions during times of the day when they are feeling anxious or stressed.

New York State's Education Department has identified fourteen quality program indicators for students with ASD (The University of the State of New York, 2001). They include details for the instructional activities, methods and environments ideally utilized with these students. Essentially this entails providing a structure that maximizes the student's personal strengths while minimizing any variables that may interfere with the learning process. Also, environmental supports may need to be provided to facilitate the student's ability to learn. This may involve the use of visual aids, such as a visual schedule of the student's day. The student may refer to the visual throughout the day so that they can prepare themselves for unstructured times of the day, such as lining up for lunch. Notably, this guide also contains personnel requirements for those working with students with ASD. See Table 1 for these quality program indicators.

Insert Table 1 here

Other academic considerations that may need to be added to IEP's include classroom survival skills like imitation, matching, phonological awareness and visual-motor tasks (Wilczynski, Menousek, Hunter, & Mudgal, 2007). Also, critical thinking skills may need to be

incorporated for younger children with ASD such as identifying wrong, missing, or opposite items within a picture. Group skills that may need further development include appropriate ways of gaining attention, waiting in line, sitting and listening, and regulating behavior. IEP's should also include any personal care skills that need consideration for a particular student. This may consist of any feeding, sleeping, toileting, self-care, or vocational skills the student requires to become a functioning member of the community.

Autism affects many aspects of thinking and learning, so programming should include systematic instruction to address these learning needs (Iovannone, Dunlap, Huber, & Kincaid, 2003). Teaching methods must be behaviorally based, relying on the principles of learning and behavior. Research has also identified a behaviorally based approach, specifically Applied Behavior Analysis (ABA), as evidence based teaching methodology to be used with students with ASD. The behavioral approach is used to determine credible educational goals, outline and implement specific teaching methods, and then for evaluating student progress and making adaptations to teaching methods if necessary. Students with ASD also require the use of direct instruction in order to learn best. Task analysis, or breaking complex concepts into manageable steps and avoiding ambiguous wording during teaching are aspects of direct instruction that may be useful for students with ASD. All new skills and behaviors should be taught in a way that fosters generalization to different settings (Rogers & Vismara, 2008). This can be done by teaching skills in functional ways in the student's natural environment and incorporating them into their daily routine.

Problem behaviors in children with ASD add yet another dimension that must be considered (Iovannone, Dunlap, Huber, & Kincaid, 2003). Rogers & Vismara (2008) found that challenging behaviors are best treated using positive behavior supports. This involves identifying

the function of problem behaviors and replacing them with appropriate alternative behaviors. For example, if a student is banging his head against a desk to gain adult attention, the student should be taught alternative ways to gain adult attention so that this need may be satisfied through more appropriate means. The function of a maladaptive behavior can be determined by performing a Functional Behavior Assessment (FBA) and developing a behavioral intervention plan. Behavior management may also require supports to recognize feelings of frustration and utilize relaxation strategies such as deep breathing as needed (Wilczynski, Menousek, Hunter, & Mudgal, 2007).

Finally, the team must utilize the student's family in creating the educational plan (Iovannone, Dunlap, Huber, & Kincaid, 2003). As they were likely the first individuals to recognize delays in their child and to seek treatment, they will be the most knowledgeable on what has and has not worked with their child in the past. Family members should have significant input regarding goal setting and prioritizing skill development for their children (Rogers & Vismara, 2008).

The National Autism Center (2009) recently identified eleven treatments as "established" as being effective for students with ASD. These treatment programs were evaluated in terms of necessary skills increased (academic, communication, interpersonal, play, self-regulation, etc), and negative behaviors decreased. While there is significant research to suggest that these treatments are effective, improvement cannot be expected to occur to the same degree for all students with ASD because these individuals vary so greatly. See Table 2 for additional information on these treatments.

Insert Table 2 here

The use of these treatments is more complicated than merely knowing they are evidence-based (National Autism Center, 2009). While this is essential, there are other factors identified by the National Autism Center (2009) that must be taken into consideration. The individuals responsible for determining the treatment plan must know the strength of the evidence behind each treatment. In addition, the judgment of school-based professionals with expertise in ASD must also be taken into consideration. For example, if the student with ASD is experiencing co-occurring depression, this may moderate the way the intervention is delivered to this student. This factor highlights the importance of having access to expertise, such as an autism consultant, when determining an educational plan. This also requires school-based professionals who are knowledgeable in evidence-based treatment programs and who feel prepared to work with this population. Another factor identified for consideration is the values and preferences of the parents, care givers, and student with ASD. Finally, treatment providers must consider the capacity and sustainability of the people involved in treatment. This entails making sure school-based professionals receive proper training, have access to necessary resources, and have ongoing feedback regarding implementation fidelity. Again, this points to the importance of having well trained and qualified educational professionals because the effectiveness of the treatment program would be greatly hindered if implemented by a poorly prepared staff.

Teacher Preparation

As mentioned, school-based professionals qualified to work with students with ASD are the number one component of effective intervention programs (Simpson, 2008). Numerous considerations must be taken into account to ensure that students with ASD are receiving quality instruction designed specifically to meet their needs, but there is no single cohesive program that has been identified for use with this population because it is so heterogeneous in nature. Teachers

and related service professionals must therefore be well versed in a variety of effective instructional techniques so that they may adapt their approach accordingly for each student. These students are less likely to catch on to classroom curriculum independently or through observing other students (Schuermann, Webber, Boutat, & Goodwin, 2003). They learn best with teachers who are thorough, motivated, and attentive to the material they teach and how they teach it.

Teachers of students with ASD ought to possess a certain set of skills in order to assess student needs, teach new skills, and manage problem behavior (Simpson, 2008). These students require teachers who have the unique expertise necessary to provide comprehensive, clear, and useful instruction in the fundamental areas of learning (Schuermann, Webber, Boutot, & Goodwin, 2003). Educators need a solid base in both general and special education knowledge and techniques. They also must be aware of core and associated features of ASD. Educators should be able to determine the degree of impairment in the student with ASD in order to develop an individualized curriculum using evidence-based instruction. In addition, they need to differentiate instruction, and supplement core academic curriculum with teaching valuable social, problem solving, and coping skills. They should be able to implement interventions with fidelity, assess for their effectiveness and modify strategies when needed. These strategies include the use of varying rates of reinforcement for positive behaviors, and avoiding unintentionally reinforcing challenging behavior (Simpson, 2008). It is also crucial that they be able to effectively coordinate with the student's family as well as with other related service professionals involved. The teacher must develop a program plan for each student that indicates each goal and a plan that details the steps for achieving that goal. It should be specific enough that staff assistants and family members can also implement or support the plan. Also, the teacher should create an

integrated school curriculum to ensure that the child is receiving a comprehensive education. Materials and record forms will be numerous if the program plan is implemented properly. Therefore, it is important that educators remain organized at all times.

Evidence-based interventions are only effective to the extent that the personnel utilizing them implement them with good integrity (Simpson, 2008). Educators serve an important function in selecting the proper strategies for each student and in effectively carrying them out. Therefore, it is imperative that educators be knowledgeable of evidence-based interventions specifically for students with ASD. Furthermore, students make their most significant growth when they can build constructive relationships with teachers whom they trust. Positive relationships are closely associated with effective educational programming (Simpson, 2008). One may speculate that this is because inadequate programming that fails to meet students' needs is a source of frustration for the child and staff.

Lack of preparation and training among multi-disciplinary team members

Research regarding children with ASD, core characteristics, and the unique challenges they face with regard to education is vast. However, there is evidence to suggest that teachers are still not utilizing evidence-based techniques in the classroom (Hess, Morrier, Heflin, & Ivey, 2008). Hess et al. (2008) found that fewer than 10% of the methods being used with students with ASD in Georgia Public schools were evidence-based. Also, only 7.7% of Georgia educators responding to the survey reported using evidence-based strategies. The issue then is to determine what is preventing them from doing so. One such challenge is finding the time to continue their education with regards to students with ASD (Lerman, Tetreault, Hovanetz, Strobel & Garro, 2008). Another barrier is that best practice guidelines are not currently broken down by grade level. This leads to confusion regarding which techniques to utilize with which age group. Thus

educators are essentially left to their own devices when choosing an intervention. As a result, in the absence of more specific empirical data, decisions may be made based on considerations other than science, such as financial restraints or limited time and resources. This reinforces the importance of having ongoing training in ASD, or access to expert consultation in this area in order to make informed decisions regarding interventions. Without proper training or resources, teachers may stick with a particular treatment because they are more familiar with it, even if it is not the best choice for the student.

Schools may also be protecting themselves from legal action by allowing all ASD treatments to be used for all students, rather than specifying a particular treatment because it is evidence-based (Hess, Morrier, Heflin, & Ivey, 2008). If a particular treatment appears to be working for one student, they wouldn't want the parents of another child to sue because that treatment wasn't being used with their child. By collecting data to track the student's response to the intervention being utilized, school-based professionals can determine whether or not it is effective for the student. They can also protect themselves legally, to explain why a certain treatment was continued, or why it was discontinued and an additional intervention was utilized.

The National Research Council (2001) found that the majority of teachers receive relatively little formal training on evidence-based practices to utilize with their students with ASD (Lerman, Tetreault, Hovanetz, Strobel & Garro, 2008). This directly contradicts the federal legislation, No Child Left Behind Act of 2001, which requires that evidence based research practices be applied in educational settings (Loiacono & Allen, 2008) such as the use of Applied Behavior Analysis (ABA) techniques. Loiacono and Allen (2008) found that within the Western Suffolk BOCES region of New York State, 89% of special education teachers surveyed received no formal training or instruction in ABA. This suggests that they are ill prepared professionally

to utilize the evidence-based strategies necessary to successfully instruct students with ASD. Only 11% received training in ABA and would be considered at least partially prepared to teach children with ASD. Interestingly, all of the teachers surveyed are certified to provide instruction to this population. Loiacono and Allen (2008) also found that nine of the sixteen districts surveyed had less than 10% of their special education teachers trained in ABA. The No Child Left Behind Act (NCLB) also mandates that all students must be taught by highly qualified teachers. This raises other issues about teacher certification, including, if a teacher has met state standards for certification, yet has not received formal training in autism, are they really "highly qualified" to work with this population (Scheuermann, et al., 2003). Local colleges and universities were also surveyed and only six of the thirty schools of education reported offering coursework specifically in ABA methodology (Loiacono & Allen, 2008).

Very little data exist regarding the other aspects of personnel preparation in ASD (Scheuermann, et. al., 2003). More specifically, no data exist concerning the amount of autism specialists trained yearly, how autism personnel preparation actually operates, or which disciplines are responsible for carrying out the training. Loiacono and Allen (2008), found a need for special education and regular education teachers who received training in ABA to be assessed and evaluated by their individual school districts, and by adequately trained personnel to determine what percent are in fact professionally prepared to teach students with ASD. ABA is only one aspect of preparation to work with students with ASD, however it provides an important foundation for how to understand behavior demonstrated by students with ASD, and provides a framework for thinking about how to change or adapt their behaviors as necessary.

Cascella and Colella (2004) conducted a study that surveyed speech-language pathologists (SLPs) practicing in the state of Connecticut regarding their pre-professional

education and current knowledge of ASD. Results indicated that SLPs were underprepared for the unique challenges inherent to working with students with ASD. In fact, 69.2% of the participants reported having little or no undergraduate or graduate coursework in ASD. Also, 89.4% of respondents recalled having five or fewer actual class sessions delegated to instruction in ASD. Participants were also asked to rate their knowledge of statements pertaining to various topics related to ASD including: general knowledge of ASD, DSM-IV-TR categories, educational intervention, assessment, and inclusion. The SLPs rated themselves as “knowledgeable” for ten and “somewhat knowledgeable” for 18 of the 28 statements. The participants did not rate themselves as “very knowledgeable” on any of the ASD-related statements. Results of this study suggest that SLP’s are generally not well trained in the area of ASD, which is concerning given they are typically the service providers responsible for working on core deficits inherent to the disorder (e.g. social skills, pragmatic language). However, limitations were recognized such that these results could only be applied to SLPs practicing in Connecticut. They determined that further research was needed in this area to assess different regions.

Schwartz & Drager (2008), sought to do just that by assessing the knowledge of ASD among SLPs taken from a national ASHA database. They also took the research one step further by examining the educational/clinical training received, the confidence in their training and how it prepared them to provide services effectively to students with ASD. Results indicated that practicing SLPs had more accurate knowledge of the associated features that sometimes accompany ASD than they did the core features required for a diagnosis. For example, 96% of participants reported knowing that some children with ASD demonstrate uneven gross and fine motor skills; whereas, almost half of the respondents falsely claimed that repetitive/stereotypical

behaviors were not necessary to receive a diagnosis of autism. Furthermore, 25.3% of participants did not feel competent enough to determine reasonable goals for students with ASD, and 32.8% reported not feeling prepared to counsel the parents of children with ASD. A remarkable 91.0% noted that they felt they would benefit from further training in the area of ASD.

Research was found regarding training and preparation of school psychologists in the area of ASD. For example, in a national survey of school psychologists, Gilmour (2010) found that training for school psychologists may be insufficient, particularly with respect to issues related to co-occurring emotional and behavioral disorders. However, research conducted on other members of the multi-disciplinary team responsible for service delivery to students with ASD (physical therapists, occupational therapists, etc.) was not found in the current literature. Moreover, Cascella and Colella (2004) report that it is critical for all members of the educational team to evaluate their knowledge and skill level with regard to ASD. They suggested that it might be useful to use a rating scale in order to assess the team's relative strengths and weaknesses so that further professional development options can be tailored to the team's needs.

Types of professional training and training mandates

Professional training can be broken down into two types – pre-service training (e.g. undergraduate and graduate coursework/practica) and in-service training (e.g. professional development such as conferences/workshops attended by district employees). Professional training programs are responsible for pre-service training and are integral to ensuring that graduates enter the work force qualified to work with students with ASD. School districts may offer in-service training for individuals on the educational team for any additional areas of development needed. It appears that despite school districts' efforts to provide in-service staff

development, colleges and universities are failing in their responsibilities to adequately train prospective special educators to work with students with ASD (Loiacono & Allen, 2008).

Attempts have been made to regulate the training of service providers for students with ASD. New York State enacted legislation that took effect on October 9, 2008, which increased the number of coursework or training hours specifically in autism from two to three hours in order to be certification eligible after September 2, 2009 (New York State Education Department, 2008). The law was passed to ensure that students with ASD have knowledgeable and prepared special education teachers and special education administrators. This legislation applies to those seeking certification to teach the following populations of students: students with disabilities, speech and language impairments, deaf and hard of hearing, blind and visually impaired. School administrators are also required to participate in this training. Coursework should include the etiology, prevalence, characteristics, and evidence-based instructional methodology for teaching students with ASD. It should also cover supports to promote communication and socialization skills, and skill generalization. Also included are functional behavioral assessments, behavioral intervention plans, positive behavioral supports and collaboration with home. The legislation further mandates that faculty members teaching this coursework must hold at least a masters degree and have specialized training in the area of autism. This legislation is a good starting point; however, it does not mandate that regular education teachers receive this training and they too are likely to work with students with ASD with the increasing rate of inclusion. Also, the coursework content is very general and open-ended. For example, while it mandates the use of evidence-based instruction it is not very specific regarding the course format or curriculum. Furthermore, considering the high level of knowledge and skills necessary to work effectively with students with ASD, it has not been

conclusively demonstrated that three hours of coursework or training is enough to adequately prepare educators.

In addition, the American Speech-Language-Hearing Association (ASHA) recently published guidelines detailing the roles and responsibilities of Speech-Language Pathologists (SLP's) in the diagnosis, assessment, and treatment of students with ASD (ASHA, 2006a, 2006b, 2006c, & 2006d). This includes, but is not limited to, having knowledge of the core characteristics and challenges associated with ASD, understanding the demands ASD places on the family, instruments to use for screening and diagnosing ASD, considerations in decision making regarding intervention approaches with ASD, and effective program planning and goal setting strategies.

Current study

The current study surveyed teachers and other members of the school multidisciplinary team (e.g. speech-language pathologists, school psychologists) regarding the kind of training related to ASD they received, and self-reported perceptions of their preparedness and confidence to deliver various services to students with ASD. This adds to research done in this area as it examines various members of the educational team, rather than focusing on one discipline. As a result, this study can describe differences among the disciplines on ratings of confidence to deliver services in certain areas. This study also adds to knowledge by indicating whether perceptions of training, number of students with ASD on one's caseload, years of experience with ASD, or access to expert consultation predicts confidence level to deliver services. Finally, results of this study signify what areas of training educational professionals indicate as a priority. The research questions examined by the study include:

- What kinds of training experiences related to ASD do professionals have?